

Claims

1. Sorbent material having a solid support modified with a fluorinated polymer coating characterized in that the support is substantially modified with the fluorinated polymer coating which is covalently attached to the support and the fluorinated polymer coating is containing at least one functional group.
2. The sorbent material according to claim 1 wherein the support is a porous inorganic material selected from the group comprising inorganic metal oxides, such as oxides of aluminium, titanium, zirconium, silicon oxides, and/or iron oxides.
3. The sorbent material according to claim 1 wherein the support is an organic material, preferably of porous structure such as cross-linked polystyrenes, polyacrylates, and polyethylenes.
4. The sorbent material according to claims 1 to 3, wherein the organic/inorganic materials having a porous structure show at least a bidisperse distribution of the pore sizes.
5. The sorbent material according to claim 4, wherein the inorganic material with a bidisperse distribution of the pore sizes is obtainable by gelling a mixture of two silica sols having differently sized colloidal silica particles.
6. The sorbent material according to claims 2 and 3 wherein the support is in particle-like or monolithic membrane-like form.
7. The sorbent material according to claim 1 wherein the support is modified with a perfluorinated or at least partially fluorinated polymer.
8. The sorbent material according to claim 1 wherein the polymer coating is covalently attached to the support via Si-O-C, C-C, C-O-C and other chemical bonds, according to the chemical nature of the support material.

9. Sorbent material according to claim 1, wherein the surface functional groups are selected from the group consisting of hydroxy, amino, carboxyl, linear amides, cyclic amides, bromide, and aldehyde.

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10. Sorbent material according to claim 1, wherein the polymer coating has a thickness of preferably 10 to 250 Å.

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11. Sorbent material according to claim 1, wherein the polymer coating has a uniform thickness of preferably 10 to 100 Å and micropores of less than 50 Å accessible to water, salts, and low molecular weight substances being non-adsorptive towards nucleic acids and adsorptive towards proteins.

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12. Method of obtaining a sorbent material according to claims 1 - 11, characterized in depositing at lower temperature and/or pressure compared to ambient conditions fluorine containing monomer(s) on the support having surface radicals, and subsequent introduction of at least one second monomer having at least one olefinic moiety and at least one additional functional group.

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13. Method of obtaining a sorbent material according to claims 1 - 11, characterized in deposition of a reaction product of ketone and/or alcohol and a mixture of fluorine containing monomer(s) and at least one second monomer containing at least one olefinic moiety and at least one additional functional group with a subsequent temperature increase.

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14. Method according to claims 12 - 13, wherein the second monomer(s) are preferably vinylacetate, allyl alcohol, allylbromide, (meth)acrylic acid, vinylacetic acid, N-vinylpyrrolidone, (di)alkylamine, acrolein, and hydroxyethyl(meth)acrylate.

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15. Method according to claim 12, wherein the surface radicals of the support will be obtained by high energy radiation such as X-ray, gamma, UV or by ozone treatment.

5 16. Method for separation of substances using the sorbent material according to claims 1 – 11 in a separation process.

17. Method for separation of substances according to claim 16, wherein the substances are nucleic acids and/or proteins.

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18. A chromatographic column or cartridge filled at least partially with the sorbent material according to claims 1 – 11.

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19. Method for separation of substances according to claim 16, wherein nucleic acids flow through a chromatographic column or cartridge according to claim 18 without retention while proteins, salts and other low molecular weight substances are retained.

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20. A membrane-like device comprising the sorbent material according to claims 1 – 11, which is embedded in a polymeric matrix, such as a nylon membrane.

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21. A device comprising the sorbent material of claims 1 – 11 in loose form preferably for batch or magnetic separation.

22. A miniaturized device comprising the sorbent material of claims 1 – 11 for detection and/or separation of bioorganic compounds.

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23. Miniaturized device according to claim 21 in form of chips or microreactors.